WEATHER OF THE MONTH.

WEATHER OF NORTH AMERICA AND ADJACENT OCEANS.

GENERAL PRESSURE CONDITIONS.

By H. C. FRANKENFIELD, Supervising Forecaster.

North Pacific Ocean.—At Midway Island pressure was well above the normal during the first two weeks of the month, and moderately high, as a rule, during the third week, while thereafter it averaged somewhat low. At Honolulu pressure was high during the first decade of the month, and generally below normal thereafter.

Alaska.—High pressure prevailed during the first five days of the month, and general low pressure thereafter, although during the last few days of the month pressure near the coast was substantially above the normal. Over the Aleutian Islands, however, a decade of quite low pressure was followed by a more marked opposite condition during the remainder of the month. Temperatures were variable within moderate limits during the first half of the month, but much below normal during the second half.

United States.—The month was characterized by a remarkable series of great disturbances that moved across the country. There were six of these in all, and a seventh was in progress at the close of the month. Abnormally low pressures prevailed in every instance, 28.56 inches in one, and all, except one, were attended by severe gales and rains. Destructive tornadoes also occurred during the eastward movement of the storm of March 26–30, and an extensive and marked high-pressure wave with low temperatures followed the storm of March 1–7, but there were no other HIGH of consequence. The temperature average was high except during the first few days of the month.

North Atlantic Ocean.—Stations of observation at Bermuda and Horta. Except on a few days, pressure was above normal, decidely so from about March 5 to 15, inclusive.

NORTH PACIFIC OCEAN.

By F. G. TINGLEY.

The principal disturbance of the month on the North Pacific Ocean was that which prevailed at the end of the first and the beginning of the second decade over the western part of the ocean, affecting shipping on the northern steamer route between the 140th and 170th meridians, east longitude. Several vessels which were in the field of this depression reported barometric readings of 29 inches, or below. Fresh to strong gales were general over an extensive area and at intervals the wind reached the force of a whole gale. The highest winds were from the western quadrants.

East of the 170th meridian, east longitude, the weather was relatively quiet throughout the month except from about the 16th to the 24th when fresh to strong gales were encountered by a few ships in waters to the southward of the Alaskan Peninsula.

NORTH AMERICA.

By H. C. FRANKENFIELD, Supervising Forecaster.

The month of March, 1920, was indeed a remarkable one from a meteorological viewpoint. No less than seven disturbances of an abnormal character moved across the country, the dates of appearance and disappearance being as follows:

No. 1. March 1–7, inclusive.
No. 2. March 9–15, inclusive.
No. 3. March 13–17, inclusive.
No. 4. March 15–21, inclusive.
No. 5. March 24–27, inclusive.
No. 6. March 26–30, inclusive.
No. 7. March 29–April 3, inclusive.

There was much similarity in the development, movement and attendant phenomena of these storms, and the interval between them was so short that, with the exception of the first one, there was no succeeding HIGH of any considerable magnitude, and no unusually low temperatures. As a matter of fact, temperatures were above normal after the passage of the HIGH that succeeded the storm of March 1–7, but this early cold extended throughout the entire South, and on the morning of March 7 heavy frost occurred down to the southern limits of the mainland of Florida.

The storm of March 26–30 was attended by severe local storms and tornadoes on March 28, and these will be discussed in the April REVIEW.

NORTH ATLANTIC OCEAN.

By F. A. YOUNG.

The average pressure for the month was nearly normal at land stations on the coasts of Newfoundland, Canada, and the greater part of the United States, while it was slightly higher than usual at Key West and Bermuda. In the Azores the pressure was considerably above the normal and slightly below in northern European waters, causing a somewhat steeper gradient than usual between the two regions.

The number of days on which gales were observed was apparently not far from the normal over the greater part of the ocean, although in the 5-degree square immediately north of Bermuda they were recorded on 9 days, which is considerably more than usual.

According to reports received there was very little fog during the month, as it was not recorded on more than one day in any 5-degree square.

On March 1 there was a well-developed LOW central near the intersection of the 40th parallel and 65th meridian, while moderate to strong gales prevailed over a limited area west of the 60th meridian. This disturbance moved eastward with moderate speed, and on the 2d the center was near latitude 43°, longitude 55°, and southerly winds of gale force were still encountered in the easterly quadrants. During the next 24 hours the LOW moved but little, decreasing in intensity, although on the 3d a few reports were received denoting moderate northerly gales between the 50th and 60th meridians. The storm log from the French S. S. *Canada* is as follows:

Gale began on the 1st at 7:30 a. m. Lowest barometer reading 29.58 inches at 8 p. m. on the 2d; position 38° 45′ N., 58° 35′ W. End of gale on the 3d; highest force of wind, 11; shifts of wind near time of lowest barometer reading SE.–S.–SW.–WSW.–SSE.–WSW.–NNW.–N.

On the 5th Hatteras was near the center of a LOW, the barometer at that station reading 29.50 inches; only

moderate winds were recorded by vessels in the immediate vicinity, while moderate to strong gales prevailed over a portion of the steamer lanes, accompanied by comparatively high pressure. During the next 24 hours this disturbance moved northeastward along the coast, as on the 6th the center was near Nantucket, the weather conditions having changed but little. The disturbance continued its northeasterly drift and on the 7th was off the west coast of Newfoundland. At the same time there was a second LOW over the North Sea, and heavy weather was experienced over the greater part of the ocean north of the 40th parallel. The storm log from the British S. S. *Stanmore* is as follows:

Gale began on the 6th; position 42° 24′ N., 67° 52′ W. End of gale on the 7th. Highest force of wind, 10; shifts of wind, S.-W.

From the 8th to the 12th moderate weather with high pressure was the rule over the greater part of the ocean, although on the 11th and 12th moderate gales were reported over a limited area between the 20th parallel and the European coast.

By the 13th the storm area had extended to a considerable extent, reaching as far west as the 35th meridian, and there was a second disturbance central near the Virginia Capes, with southerly gales along the American coast between Nantucket and Charleston.

On March 14, as shown on Chart IX, this disturbance had increased considerably in intensity. Ireland was also surrounded by a well-developed LOW, and strong westerly gales covered the eastern and western sections of the steamer lanes.

Chart X for March 15, shows that both of these disturbances had decreased in intensity during the next 24 hours, as by the 15th the storm area had contracted in area, and comparatively few reports of gales were received. The storm log from the American S. S. *American Star* is as follows:

Gale began on the 12th. Lowest barometer 29.24 inches at 6 p. m. on the 13th; position 38° 20′ N., 71° 17′ W. End of gale on the 15th. Highest force of wind, 10; shifts of wind, SW.-W.

From the 16th to the 23d conditions over the ocean were comparatively featureless, although on the 21st a few reports were received denoting moderate gales between the 40th and 45th parallels and 55th and 63d meridians.

Charts XI to XIV show the wind and weather conditions during the period from the 24th to the 27th, both inclusive, with the nearly stationary storm area over the mid and eastern sections of the steamer lanes. The observer on the Belgian S. S. *Egalntier* states in the storm log:

Gale began on the 23d. Lowest barometer 29.80 inches at 9:30 a. m. on the 24th; position 45° 02′ N., 35° 19′ W. End of gale on the 28th. Highest force, 12; shifts of wind, N.-W.-NW.

On the 25th a few vessels between the 48th and 53d parallels and the 20th and 25th meridians encountered severe northerly gales, while light to moderate winds prevailed over the remainder of the ocean, except that one vessel about 200 miles north of Bermuda reported a westerly wind of about 50 miles an hour. This disturbance must have been very local in its character, as all other vessels in that vicinity encountered moderate winds.

The observer on the British S. S. *Pannonia* reports as follows:

On March 31, at 2 a. m. (G. M. T.), in latitude 37° 20′ N., longitude 65° 30′ W., we encountered a cyclonic squall. The water was boiling and whirling in several places, the highest spiral being about 40 feet above the water. A strong westerly wind, force 9, was blowing at the time, with a rough sea and steady barometer of 29.94 inches. Cumulus and cirro-cumulus clouds.

NOTES ON WEATHER IN OTHER PARTS OF THE WORLD.

Nova Scotia.—Halifax, March 2.—Arctic ice packs, literally black with walrus, seals and other polar creatures, are the largest within memory, according to reports * * * [of] sailors and overland travelers.

The solid ice extends farther south than at any time within years, with the bays and inlets fringing the Newfoundland coast locked tightly.

Newfoundland is ice bound and railroads are completely tied up. Inhabitants in the interior are suffering intensely.—*Chicago Evening Journal, March 2, 1920.*

Cuba.—Habana, March 21.—A heavy downpour of rain accompanied by a hailstorm of unprecendented violence swept over the city this afternoon, flooding houses in the lower sections of the city, paralyzing street car traffic for nearly two hours and causing numerous minor accidents and loss of small craft in the harbor. * * * The hailstorm, the first in sixteen years, is said to have been the heaviest and the hailstones the largest ever seen here.—*Washington (D. C.) Evening Star.*

British Isles.—Like the three months which preceded it, March was notable for its unusual mildness. * * * During the greater part of the month there was a preponderance of winds from westerly or southwesterly quarters, winds which were, moreover, frequently accompanied by copious precipitation in the form of snow, sleet, hail and rain. * * * A striking feature of the month was the frequency of warm days; at Kew Observatory, for instance, the maximum temperature was between 55° F. and 66° F. on 16 occasions, and fell below the normal on only five days. * * * The general rainfall expressed as a percentage of the average was: England and Wales, 150; Scotland, 137; Ireland, 129. In London (Camden Square) there was frequent but light rain. The mean temperature was 46.7° F., or 4.6° above the average, being the highest value recorded for March during the 63 years' record.—*The Meteorological Magazine, April, 1920, p. 51.*

Baltic region.—In western Europe March was not so disturbed as February, but in the British Isles and eastward into the Baltic the weather continued unusually warm, and at Helsingfors and Reval the sea was unusually free from ice. Early in the month a gale in the Baltic caused loss of life.—*The Meteorological Magazine, April, 1920, p. 56.*

Mediterranean.—Paris, March 27.—Two French steamers * * * have been missing since the recent hurricane over the Mediterranean, and it is believed they were lost with all hands [42] * * *.—*New York Evening Post, March 27, 1920.*

Near East.—The cold and stormy conditions of February in the Near East continued into March, with an intensity unequaled for many years, culminating about the 9th in a hurricane in the Black Sea, which destroyed an American Red Cross steamer, with the loss of 500 invalided soldiers.—*The Meteorological Magazine, April, 1920, p. 56.*